Always On™
UPS Systems Inc.

BP20812060-2ATS-DCC

UPS Redundancy
And
Bypass System

UPS Redundancy Switching
TVSS Filter
Automatic Transfer Switch
Dry Contact Status

Operators Manual

Version 1.0

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Note

The instructions contained in this manual are not intended to cover all of the details or variations in equipment, or to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please refer the matter directly to *Always "On"* UPS Systems Inc.

Any electrical or mechanical modifications to this equipment, without prior written consent of *Always "On"* UPS Systems Inc, will void all warranties and may void UL/cUL/CSA listing. Unauthorized modifications can also result in personal injury, death, or destruction of the equipment.

Redundant Bypass System

Please complete the below information and return it to *Always "On"* UPS Systems Inc. This will activate the warranty.

If additional information or technical assistance is required call:

Always "On" UPS Systems Inc Sales and Technical Support Line

Toll free at 1-877-259-2976 Ext. 451 or (250) 491-9777 Ext. 451 or Fax (250) 491-9775

Or E-mail at sales@alwaysonups.com or visit our web site at www.alwaysonups.com

Or write to

Always "On" UPS Systems Inc.
#100 – 150 Campion Road,
Kelowna, BC,
V1X 7S8,
Canada

Please complete the following information for your records.

Model Number: _____

Serial Number: _____

Date of Installation: _____

Inspected By: _____

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1. Introduction

Thank-you for choosing the Always “On” UPS Redundancy and UPS Bypass Line Conditioner. It is designed to provide a high degree of protection for the critical loads connected. This manual is a guide to installing and using the Bypass System. It includes important safety instructions for operation and correct installation. Please read this manual in its entirety before setting up, installing and powering up the equipment.

This system is designed to allow for redundant switching between two UPS systems and an alternate AC source. This system will automatically or manually transfer from one UPS to the other and also provide allowances to transfer from UPS power to the alternate AC source.

The UPS redundant switching provides automatic (or manually initiated) transfer from the Primary UPS (UPS #1) to the Standby UPS (UPS #2) in the event UPS #1 is shutdown or a critical failure has occurred. This switching ensures redundant protection, while maintaining noise-free and back-up AC power to all the critical loads connected.

The Bypass switching allows for maintenance or repair of the UPS systems without interruption of power to the critical loads. This switching is also designed with an automatic feature so in the unlikely event of a shutdown of both UPS systems the Bypass will automatically transfer the supply to the alternate source. When the system is in Bypass Mode the unit incorporates an Always “On” TVSS filter, which will continue to filter the utility power to the critical loads ensuring clean power at all times.

The intelligence built into the Bypass recognizes which UPS is supplying power and in the event the UPS output power is lost, and utility is still present, it will automatically switch to bypass mode. The Dry Contact communications will notify the connected equipment that they are no longer running off the UPS power. This will allow the user to program a switch in equipment operation, or to provide remote status. So in the unlikely event of a power outage, while the system is in bypass mode the connected loads can be prepared.

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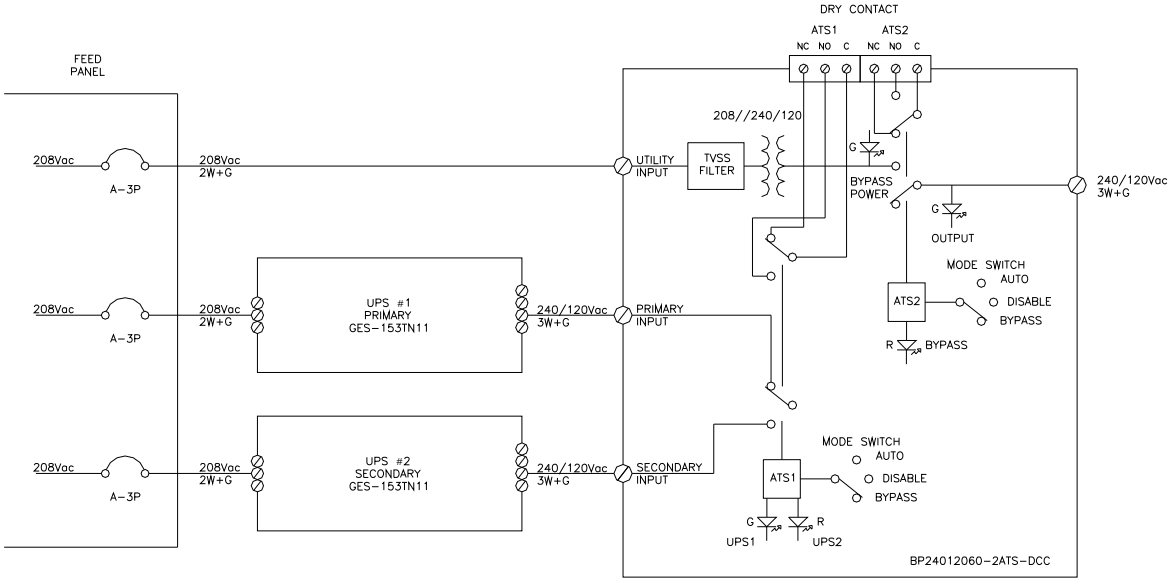
2. Block Diagram



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3. *Layout*

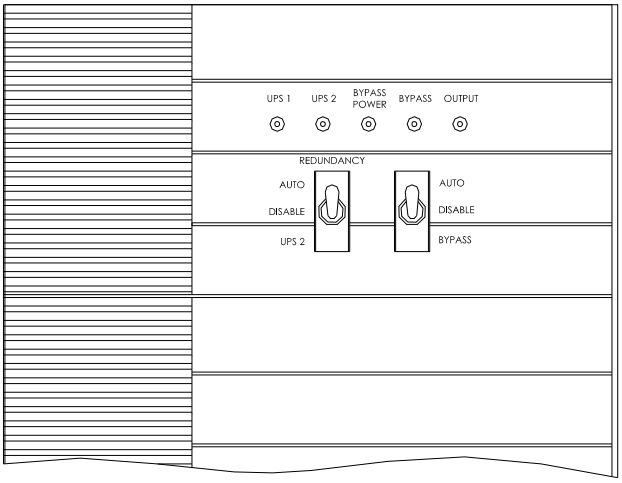

Figure 3.1
Front of the Bypass

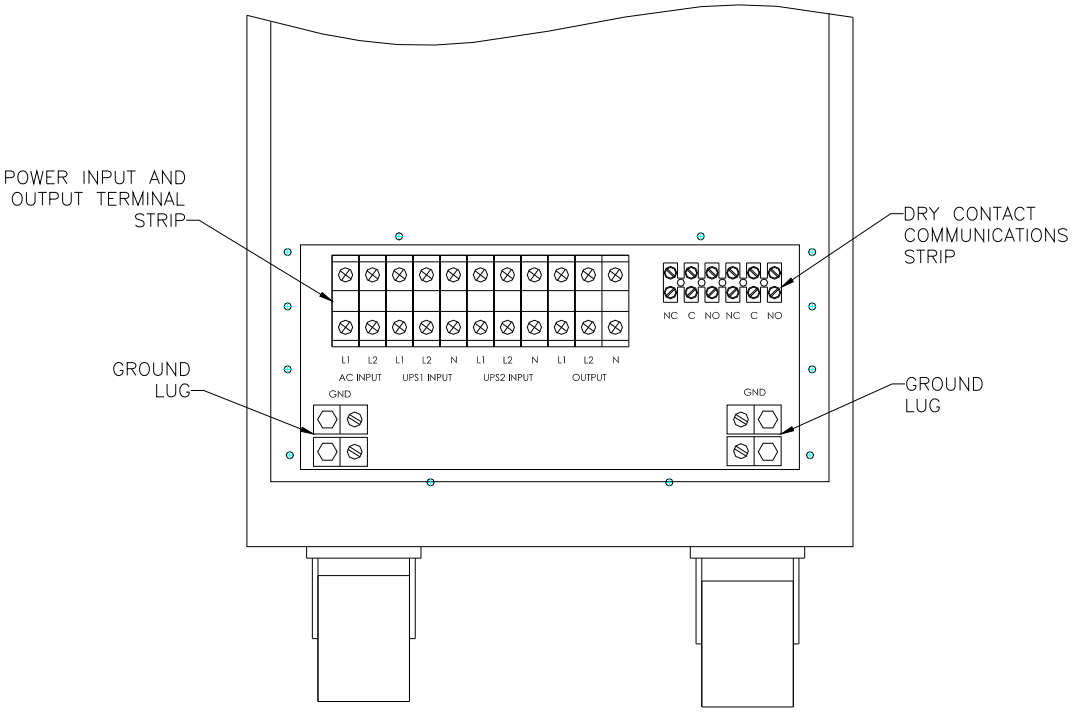

Figure 3.2
Back of the Bypass

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4. Site Preparation

4.1. Delivery

Upon receiving the Bypass system, inspect the packaging integrity and the physical condition of the cabinet carefully.
In the event that physical damage is visible, the carrier must be informed immediately and a claim filed with them. Inform Always “On” as soon as the claim has been filed. A copy of the claim should be faxed to Always “On” at (250) 491-9775.
A detailed report of the damage is necessary for carrier insurance claim.

4.2. Inspection

Unpack the system carefully. Be sure to notice the packing method, and retain the box and packing material. If you must return the system at any time, you must repack it the way it was originally shipped. Visually inspect the system for damage that may have occurred during shipment. If there is damage, or anything is missing, contact the dealer from whom you purchased the unit, and save the packaging for future shipment. When the system has passed the initial inspection, record the installation date on the back panel of the unit and in the space provided towards the front of this manual.

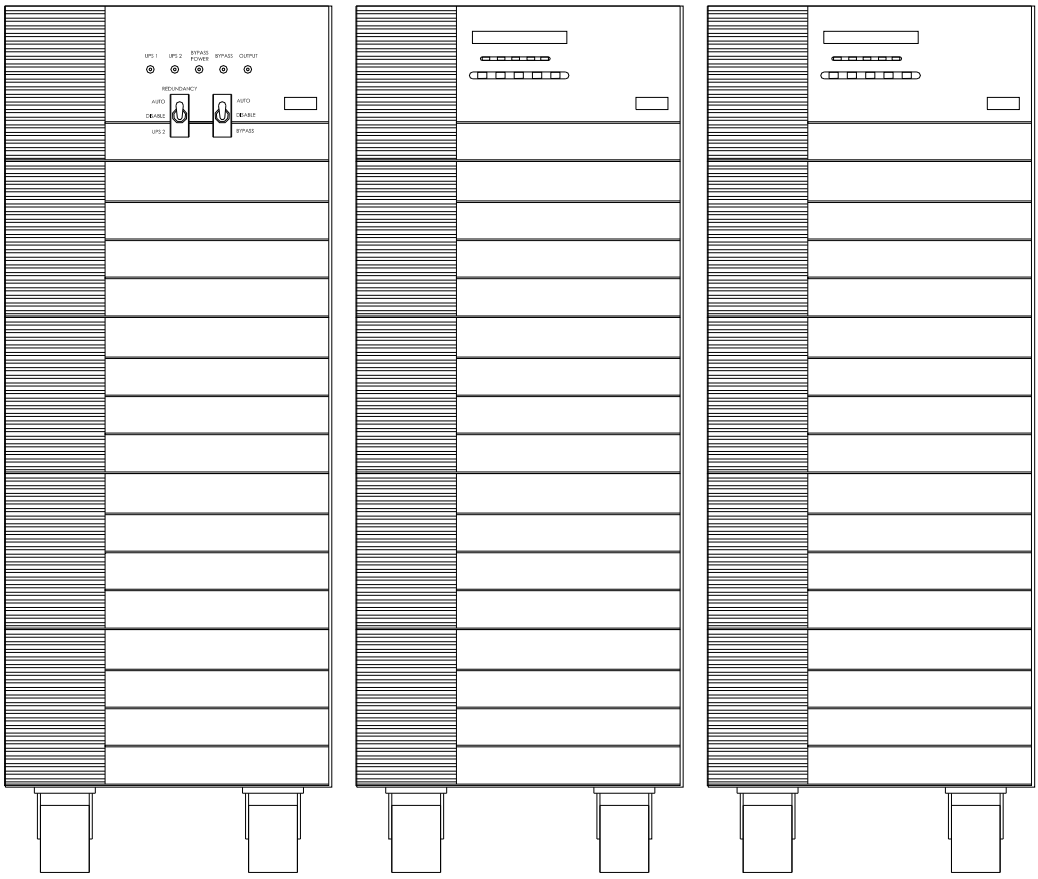
Included with Bypass System:
User manual

4.3. Storage

If the system is to be stored prior to installation, it should be placed in a dry area where it will not be exposed to dirt, moisture or other contaminants.
Extreme storage temperatures are: -30°C to +60°C

4.4. Location

The UPS is intended for installation in a temperature-controlled indoor area, free of conductive contaminants. Qualified individuals should conduct installation. Below is an example of one installation.



Note: We recommend placing ID stickers on the systems to ensure proper user connections and operation.

5. Installation

WARNING!
The Bypass system should be installed by a qualified technician or personnel and wired in accordance with local and national electrical codes. Be sure the polarities and voltage match the rating of the unit. Check that the loads being protected are within the capacity of the system. Ensure no power has been applied to the systems and nothing has been turned on before proceeding.

5.1. Bypass

Note: All connections are available at the rear of the Bypass, See Figure 3.2.

1. Connect the critical loads to the Output terminal strip on the Bypass.
2. If required, connect the user provided interface to the dry contact terminal strip on the Bypass.
3. Connect input cabling from the alternate utility source to the Bypass input terminal block.

WARNING! Do NOT apply utility at this time.

4. Connect the output of the Primary UPS (UPS #1) to the UPS #1 input on the Bypass Input terminal strip using appropriate cabling.
5. Connect the output of the Standby UPS (UPS #2) to the UPS #2 input on the Bypass Input terminal strip using appropriate cabling.

WARNING! Do NOT turn UPS's on at this time.

5.2. Optional Battery Banks

1. Refer to Battery Bank Operators Manual for installation instructions.

Quick reference guide

- *Connect Battery Banks in a daisy chain fashion for each UPS system.*
- *Connect charger input cord to a utility receptacle (if applicable).*

5.3. Primary UPS (UPS #1)

1. If an optional Battery Bank has been purchased, connect the Battery Bank to the UPS. Refer to the Battery Bank Operators Manual for instructions.
2. Connect input cabling to the UPS as instructed in the included 6K-12KVA TN Series Operators Manual.

WARNING! Do NOT apply utility at this time.

WARNING! Do NOT turn UPS on at this time.

5.4. Standby UPS (UPS #2)

1. If an optional Battery Bank has been purchased, connect the Battery Bank to the UPS. Refer to the Battery Bank Operators Manual for instructions.
2. Connect input cabling to the UPS as instructed in the included 6K-12KVA TN Series Operators Manual.

WARNING! Do NOT apply utility at this time.

WARNING! Do NOT turn UPS on at this time.

6. Operation

6.1. System Start Up

1. Ensure all connections are secure and correct as per Installation instructions.
2. Turn both switches on the Bypass to the Auto position.
3. Switch alternate utility source on.

   Note: Bypass will startup in Bypass mode (Bypass Power, Bypass, and Output LED's will be illuminated).
4. Turn on UPS #2 (Refer to 6K-12KVA TN series Operators Manual for instructions).

   Note: Bypass will switch to UPS2 mode (UPS2, Bypass Power, and Output LED's will be illuminated, Bypass LED will go out).
5. Turn on UPS #1 (Refer to 6K-12KVA TN series Operators Manual for instructions).

   Note: Bypass will switch to UPS1 mode (UPS1, Bypass Power, and Output LED's will be illuminated, UPS2 LED will go out).
6. Turn on loads sequentially as required.

6.2. System Shutdown

1. Turn off loads sequentially as required.
2. Turn off UPS #1 (Refer to 6K-12KVA TN Series Operators Manual for instructions).

   Note: Bypass will switch to UPS2 mode (UPS2, Bypass Power, and Output LED's will be illuminated, UPS1 LED will go out).
3. Turn off UPS #2 (Refer to 6K-12KVA TN Series Operators Manual for instructions).

   Note: Bypass will switch to Bypass mode (Bypass Power, Bypass, and Output LED's will be illuminated, UPS2 LED will go out).
4. Disconnect the Bypass from the alternate utility source.
5. Disconnect the UPS #1 from utility.
6. Disconnect the UPS #2 from utility.
7. Disconnect the Battery Banks from utility (if required).
8. Disconnect the Battery Banks from the UPS systems (if required).
9. System is now shutdown.

6.3. ATS1 – Redundancy Transfer Switch

Mode Switch in "Auto" Position

This position provides an automatic transfer switch (ATS) between the Primary UPS (UPS #1) and the Standby UPS (UPS #2). Priority for output power selection is given to UPS #1.

If UPS #1 power is removed (UPS turned off, UPS output off, etc), the ATS will transfer to UPS #2 mode automatically and maintain power to the critical loads. The UPS2 indicator will illuminate and the UPS1 indicator will go out. When UPS #1 power is re-established the ATS will automatically switch back to normal mode and supply UPS #1 power to the loads. The UPS1 indicator will illuminate and the UPS2 indicator will go out.

Mode Switch in "Disable" Position

With the switch in this position, the automatic transfer is disabled and the switch is locked in the UPS1 position. The UPS #1 output is fed to the critical loads via ATS2. The loads can lose power if UPS #1 power is removed and Bypass Power is not present.

Mode Switch in the "UPS2" Position

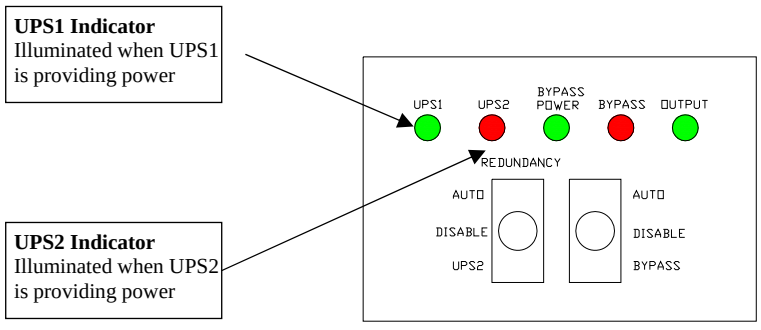
This causes a manual transfer to UPS2 mode. This swaps the Primary UPS and Standby UPS around, which means UPS #2 is now supplying the load and UPS #1 is the Standby UPS. The UPS2 indicator will illuminate indicating this mode has been selected.

This transfer can only occur if UPS #2 is operating and supplying power to the Bypass. If the switch is in UPS2 position and the UPS2 LED is not illuminated, then the transfer has not occurred. Therefore UPS #2 is not supplying power to the Bypass.

Indicators

UPS1 LED – Illuminated when ATS1 is in UPS1 position.

UPS2 LED – Illuminated when ATS1 is in UPS2 positi



6.4. ATS2 – Bypass Transfer Switch

Mode Switch in "Auto" Position

This position provides an automatic transfer switch (ATS) between the UPS supplied power (ATS1) and the Bypass (or alternate) power. Priority for output power selection is given to the UPS supplied power (ATS1).

If the UPS power is removed (both UPS's turned off, UPS's outputs off, etc) the ATS will switch to Bypass mode automatically and maintain power to the loads. The Bypass LED will illuminate.

When UPS power is re-established, the ATS will switch to UPS mode automatically and maintain power to the loads. The Bypass LED will go out.

Mode Switch in "Disable" Position

With the switch in this position, the automatic transfer is disabled and the switch is locked to only supply UPS power to the loads. The loads will lose power if both of the UPS's outputs lose power.

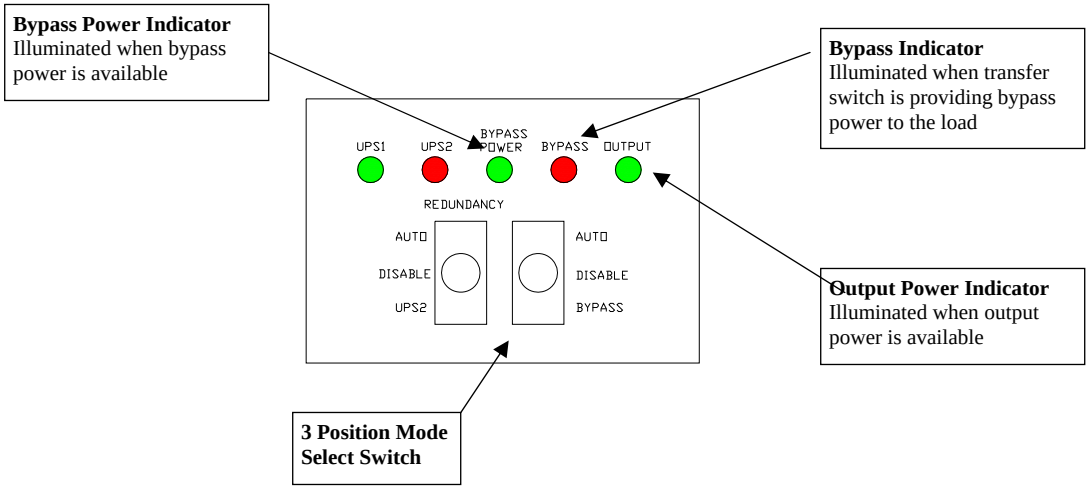
Mode Switch in "Bypass" Position

This causes a manual transfer to Bypass mode. UPS power is removed from the load and is conditioned by the Always "On" TVSS filter. Bypass power is applied to the loads. The "Bypass" indicator will be illuminated when ATS2 is operating in this mode.

Bypass mode relies on bypass power to be available, and the switching action to bypass mode is inhibited if the bypass power is not present at the transfer switch. If the "Bypass" indicator is not illuminated when the Mode switch is in this position, then the transfer to Bypass mode has not occurred. Therefore there is no Bypass power available to the Bypass.

Indicators

Output LED	Illuminated when output power is available to the load receptacles in either Normal or Bypass modes.
Bypass LED	Illuminated when the transfer switch is in the Bypass position and bypass power is feeding the load.
Bypass Power LED	Illuminated when Bypass power is available.



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7. Troubleshooting

Problem	Possible Cause	Action to Take
Cannot be switched to Bypass Mode	Utility not available at input of bypass system	• Confirm Utility supply and connection.
Cannot be switched to UPS Mode	UPS power not available	• Confirm UPS supply and connection • Turn UPS on

8. Specifications

Bypass Input	Voltage	208VAC
	Frequency	60Hz
UPS 1&2 Input	Voltage	240/120VAC
	Frequency	60Hz
Output	Voltage	240/120VAC
	Capacity	62.5A
	Frequency	60 Hz
Transfer Time	Typical	8ms (1/2 cycle)
	Maximum	16ms (full cycle)
Protection	Transient Suppression	275V Clamping Voltage 5700 20,000 Amps <1 ns response
Options	Automatic Transfer Switch	1 Redundancy ATS 1 Bypass ATS
	Dry Contact Interface	Form C, ATS1 and ATS2

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9. CONTACT INFORMATION

9.1. Additional Purchases or Upgrades

Always “On” UPS Systems Inc.
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Email: sales@alwaysonups.com
Website: www.alwaysonups.com

9.2. QA / Warranty Questions

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9.3. Software Questions

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